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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,801	10/29/2001	Richard D. Posner	23608-0701	3222
25236	7590	03/11/2005	EXAMINER	
STANLEY J ROGERS 2-1507 UPPER MIDDLE ROAD BURLINGTON, ONTARIO, L7P 4M5 CANADA			JAMAL, ALEXANDER	
			ART UNIT	PAPER NUMBER
			2643	

DATE MAILED: 03/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/052,801	POSNER ET AL.	
	Examiner	Art Unit	
	Alexander Jamal	2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☒ Claim(s) 12, 17 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11242003,3142002</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

2. **Claim 17** objected to because of the following informalities: Line 8 of page 37 states “an output of the summing coupler”, but the ‘summing coupler’ is not referenced until line 10 of the claim. The reference to “a summing coupler” should be moved before the reference to “the summing coupler”. Also, in line 18 (page 37) “the error signal injection coupler” should be changed to “an error signal injection coupler”.

3. **Claim 12** objected to because of the following informalities: The claim appears to be two claim sentences. The Sentences should be combined to form a single sentence. Examiner assumes the two sentences are combined for the purposes of examination.

4. **Claim 21** objected to because of the following informalities: (claims: Page 39 line 2) “a second ratio detector output” should be changed to “a second ratio detector input”)

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 12,17** rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per **claim 12**, claim recites the limitation "the error amplifier input" in claim 1.

There is insufficient antecedent basis for this limitation in the claim. Examiner assumes the claim reads "an error amplifier input" for the purposes of examination.

As per **claim 17**, claim refers to (page 37 lines 19-20) a second phase and gain adjustment circuit coupled to the output of the first monitoring coupler. The coupler does not 'output' a signal to the phase/gain adjustment circuitry (see applicant's drawing figure 2, item 236. Examiner assumes claim reads 'a second phase and gain adjusting circuit having and input coupled to the signal monitored by the first monitor coupler'.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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8. **Claims 1,9-33** rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al. (5877653).

As per **claim 1**, Kim discloses a feed-forward linear amplifier controlled by a spurious ratio (ABSTRACT). The amplifier comprises first monitoring point 232 (Fig. 2) coupled to a first loop and a second monitoring point (234) coupled to the amplifier output. The amplifier comprises control circuitry (comprised of units 235,236,237). The control circuitry comprises inputs coupled to the first and second monitoring points, and control outputs used to control the amplifier (via ATT1,PIC1,ATT2,PIC2). The system further comprises frequency information (PCD) applied to the control unit (Col 6 lines 40-52).

As per **claim 17**, claim rejected for same reasons as claim 1 rejection. Kim's system may receive a multi carrier input signal (Col 1 lines 25-45) via input sampling coupler 216 (Fig. 2). Coupler 216 is coupled to output a signal to phase and gain circuitry (211,212,213), which are coupled to output to amplifier 214 that outputs an amplified input signal and spurious components. The amplifier further comprises distortion sampling coupler 218 (or 232) coupled to the output of amplifier 214. The system further comprises a summing coupler 219 (coupled with the distortion coupler) with an input from delay line 217, with delay line 217 also coupled to the output of coupler 216. The system further comprises first monitoring coupler (233) coupled to the output of summer 219. The system further comprises second delay line 215 coupled to

shift the phase of the amplified signal so as to be inverted (back phase) (Col 21 lines 10-32). The amplifier further comprises a second monitoring coupler (234) coupled to the output of coupler 223. The amplifier further comprises second phase and gain circuitry (220,221) coupled to the signal monitored by coupler 233, and further coupled to output to error amplifier 222, which outputs to coupler 223 (error signal injection coupler). The amplifier further comprises a control unit (units 235,236,237) that receives inputs from the first and second monitoring points, receives frequency information for the signal (PCD), and sends outputs to the second phase and gain circuitry.

As per **claims 23,33**, claims rejected as a method performed by the device of the claim 17 rejection. The spurious components are monitored via couplers 233 and 234 (Fig. 2), and the amplifier is controlled so that the phase and gain of the spurious channel and the main channel are aligned so that the ratio of the output spurious signal (detected via coupler 234) to the initially detected distortion signal (detected via coupler 233) is minimized (ie. the output distortion is suppressed) (Col 11 line 54 to Col 12 line 17).

As per **claim 31**, claim rejected for the same reasons as the claim 23 rejection. The second and third monitored components (and the associated error loop ratio) of claim 31 are analogous to the coupler 233,234 monitor points of the claim 23 rejection, and the first monitored component is coupler 231 (Fig. 2). The first monitored component is via coupler 231. The control unit functions to adjust the predistortion signal such that the

ratio (predistortion ratio) of the output signal noise (via coupler 234) to the input signal noise (via coupler 231) is minimized.

As per **claims 9, 10**, Kim discloses monitoring points 218,232,233 (Fig. 2).

As per **claims 11,12,14** claim rejected for same reasons as claim 17 rejection.

As per **claim 13**, Kim discloses vector modulation using Cartesian coordinates (either amplitude/frequency or (amplitude,frequency,phase)/time) (Col 13 lines 38-65).

As per **claims 15,20**, the system comprises first and second receivers (as part of signal selector 235 and detector 236) for receiving the monitored signals. Controller 237 comprises first and second ratio detectors coupled to the receivers via signal selector 235. The controller functions to measure the ratio as described in claim 31.

As per **claim 16**, detector 236 comprises mixers 715,718 (Fig. 7) coupled to the first monitoring point (SF), bandpass filter 716, oscillator 714, and PCD (PLL) information 713.

As per **claims 18,19**, the spurious component is intermodulation from a multi-carrier input signal caused by the non-linearity of the amplifier (Col 1 lines 15-60).

As per **claims 21**, claim rejected for same reasons as claim 15 rejection.

As per **claim 22**, the system comprises a predistorter 213 (Fig. 2).

As per **claims 24-30**, claims rejected as methods performed by the devices of the claim 1 and 17 rejections.

As per **claims 32**, the system further comprises coupler 233.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 2-8** rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (5877653) as applied to claim 1 and further in view of applicant's admitted prior art in the specification (Page 12 lines 9-22) .

As per **claims 2-8**, Kim discloses applicant's claim 1. However, Kim does not disclose that the input signal frequency information is provided from one of the following: a bank of synthesizers coupled by one of an RS232, RS485, TCP/IP or I2C bus; an input signal preset; a scanning circuit.

Kim discloses using PCD data in order to recover RF signals information in the amplifier (Col 13 lines 40-50). Applicant's specification discloses that it is known that, in an RF phone, frequency information may be obtained via a control bus (conforming to a known standard), input signal presets, or a scanning circuit (SPECIFICATION Page 12 lines 9-22). It would have been obvious to one of ordinary skill in the art at the time of this application that the frequency information could be provided by any of the known

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methods of obtaining frequency information for the advantage that the feed-forward amplifier may be implemented to be compatible with existing RF phone interfaces (thus saving the cost of adding an additional interface).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Jamal whose telephone number is 703-305-3433. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis A Kuntz can be reached on 703-305-4708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9315 for After Final communications.

AJ
March 8, 2005


CURTIS KUNTZ
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